REMARKS

General:

Claims 1-37 are pending in this application. Claims 1-22 stand rejected. Claims 23-37 stand withdrawn from consideration by the examiner.

35 U.S.C. § 102:

Claims 1-4, 7-10, 18, 20, and 22 are rejected as anticipated by U.S. Patent No. 4,594,945 (Alexandris). The basis for this rejection is not further explained. However, applicants infer from remarks by the examiner in paragraphs 4 to 6 of the office action that the examiner sees Alexandris as disclosing a gas generator with a central channel and one coated and one uncoated charge.

Alexandris in fact shows a rocket motor with two hollow charges 18 and 20, each of which burns radially from the center out. The charges are cast into a solid outer casing 12 (see col. 2, lines 63-64). The casing 12 clads the entire outer surface. Each charge is separately ignited, by igniters 24 and 25, respectively. The first charge 18 is bare on its inner and front surfaces. The second charge 20 is clad on the inner and end surfaces with a layer of cork, which prevents it from being ignited by the first charge. When the second charge is ignited, the combustion gases break up the cork cladding, and the charge then burns normally.

The present invention, as claimed in claim 1, in contrast, provides a gas generator in which part of the assembly of charges is clad and part of the assembly is bare *on its outer surface* (emphasis added). Alexandris does not disclose or suggest such a structure. As noted above, in Alexandris the entire outer surface of all charges is clad by the outer casing 12. That is essential to Alexandris's structure because Alexandris's device is a rocket motor. The outer surface must be a solid casing, to direct the exhaust gases to the nozzle 17. The charges must remain fixed to the casing as they burn, to avoid their shifting and destabilizing the rocket.

Claim 1 also recites an igniter arranged to initiate burning along the whole length of the central channel. Alexandris does not disclose or suggest such a structure. Alexandris is

primarily concerned with cladding the inner surface of one of the charges so that different parts of the length of the rocket can be ignited separately.

For all the above reasons, it is submitted that the present invention, as claimed in claim 1, is both new and non-obvious over Alexandris.

Claims 2-4, 7-10, 18-20, and 22 are dependent from claim 1 and, without prejudice to their individual merits, are believed to be allowable as claims dependent from an allowable main claim. In addition, claim 4 recites that "the cladding layer on the at least one clad charge overlaps and protects the end of an adjacent bare charge." Alexandris neither discloses nor suggests any such structure. Claim 7 recites that the igniter is positioned within the endmost bare charge. There is no disclosure or suggestion in Alexandris of "the endmost bare charge." Claims 8-10 and 22 recite an igniter positioned within the central channel. Alexandris neither discloses nor suggests any such structure. Claim 20 recites a specific relationship of dimensions within the gas generator. Alexandris does not give any of the dimensions in question, in either absolute or relative terms, and thus neither discloses nor suggests any such structure. For these reasons also, the invention as claimed in claims 4, 7-10, 20, and 22 is believed to be new and non-obvious over Alexandris.

35 U.S.C. § 103:

Claim 21 is rejected as obvious over Alexandris. The examiner asserts that "it would be obvious to expand the surface area in accordance with the formula." In fact, the surface area appears in the formula only indirectly, in as much as it is related to the thickness *e* of the burning web, which will usually be an independent variable. The formula imposes a relationship between the masses of clad and bare charges. There is no disclosure or suggestion in Alexandris of the specific relationship recited in claim 21. For this reason, in addition to the reasons set forth above with respect to claim 1, it is believed that the invention as claimed in claim 21 is non-obvious over Alexandris.

Claim 5 is rejected as obvious over Alexandris. Without prejudice to its individual merits, claim 5 is believed to be non-obvious over Alexandris for the same reasons as claim 1.

Claims 11-15 are rejected as obvious over Alexandris in view of U.S. Patent No. 3,391,739 (Venghiattis). The examiner asserts that "it would be obvious to an artisan desiring to use the charge of Alexandris in a borehole to use the cable and igniter array of Venghiattis." The examiner has failed to make out a *prima facie* case of obviousness, because he has shown no reason why any person would desire to use the charge of Alexandris in a borehole. Alexandris does not teach a gas generator for use in a well. Alexandris teaches a rocket motor. Alexandris's rocket motor would not be usable as a down-hole gas generator, because it is designed to produce gas in an axial jet, generating thrust on the rocket. The examiner does not specify which end of the rocket he proposes to attach a cable to, but it would not make sense at either end. There is nothing that would have suggested to any reasonable reader, without the benefit of hindsight based on the present invention, to use Alexandris's rocket motor in a borehole.

Further, Venghiattis's well stimulation device is a hydraulic device, in which the explosive charges 22 and 26 propel projectiles 40, 50 that end in pistons 45, 55. The pistons compress between them and burst a bag 59 of liquid 60 that is the actual well-stimulating agent. There is no reason why a person skilled in any art should attempt to combine a rocket that produces an axial jet of hot gas with a well stimulator that produces a radial expansion of liquid.

Even if somebody were to attempt to combine the teachings of Venghiattis and Alexandris, the result would not be a gas generator as claimed in claims 11-15. Neither Venghiattis nor Alexandris discloses or suggests the structure of claim 1, from which claims 11-15 are dependent, with a propellant charge part of which is clad on its outside surface and part of which is bare on its outside surface. Absent some disclosure or suggestion of that feature, the examiner has not made out a *prima facie* case of obviousness.

With reference to claims 12-14, the examiner contends that "Venghiattis teaches a ... central igniter arrangement for use in a well." As noted above, Venghiattis in fact teaches a hydraulic well stimulator, with explosive charges that propel pistons. Venghiattis does not teach or suggest an igniter for a gas generating charge, whether for a rocket motor such as Alexandris's or for a gas generating well stimulator according to the present invention.

There is nothing in the cited references that would suggest mounting an igniter for a gas generator in the manner recited in any of claims 12-14.

Claim 17 is rejected as being obvious over Alexandris in view of U.S. Patent No. 4,798,244 (Trost). The examiner asserts that it would be obvious to put "the slots of Trost" in Alexandris's rocket. It is respectfully pointed out that Trost does not teach a device with slots in the charge. The element 22 is in fact a layer of epoxy resin adhesive, see col. 9, lines 47-50. In any case, Trost is cited only as showing the additional feature recited in claim 17, and claim 17 is therefore believed to be non-obvious over the combination of Alexxandris and Trost for the same reasons as claim 1 is non-obvious over Alexandris alone.

No ground of rejection of claims 6 and 16 has been stated. In any case, those claims are believed to be allowable as claims dependent from an allowable claim 1.

Restriction requirement:

It is noted that the examiner has not replied to the merits of the applicants' traversal of the restriction requirement between groups I and II. The only ground ever stated for restriction is that "the Group I generator need not use the geophysical cable of the Group II arrangement." The examiner has never alleged that claim 1 requires any essential feature not required for the Group II claims. Claim 1 is therefore generic to claims 23-25, and the claims are proper in a single application under MPEP § 806.04(d) and 37 C.F.R. 1.141(a), last phrase. Reconsideration of the examiner's restriction requirement and allowance of claims 23-25 in the present application are requested.

The examiner's restriction requirement between Group III and the other groups was erroneous. The methods claimed in claims 26-37 are not related to the apparatus as process and apparatus for its practice. The methods are methods of assembling a gas generator, that is to say, process of making where claims 1-25 claim the product made. The merits of the examiner's arguments in support of the restriction requirement are therefore moot, and reconsideration is requested.

Conclusion:

In view of the foregoing, reconsideration of the restriction requirement and of the examiner's rejections and an early notice of allowance of all of claims 1-37 are respectfully requested.

Respectfully submitted,

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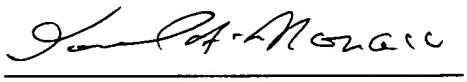
By: 

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